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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT



(PCT Article 36-and Rule 70)

18 MAR 2005

Applicant's or agent's file reference BPCL 9870	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA416)	
International application No. PCT/GB 03/03834	International filing date (day/month/year) 03.09.2003	Priority date (day/month/year) 19.09.2002
International Patent Classification (IPC) or both national classification and IPC C07C51/12		
Applicant BP CHEMICALS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.  
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
These annexes consist of a total of sheets:

3. This report contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand 07.04.2004	Date of completion of this report 04.01.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Seufert, G Telephone No. +49 89 2399-8330 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International Application No. **PCT/GB 03/03834**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)

Yes: Claims

No: Claims 1-10

Inventive step (IS)

Yes: Claims

No: Claims 1-10

Industrial applicability (IA)

Yes: Claims 1-10

No: Claims

**2. Citations and explanations**

**see separate sheet**

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Reference is made to the following document:

D1 EP-A-0 749 948

**V. Reasoned statement under Art. 35(2) PCT with regard to novelty, inventive step and industrial applicability**

**Novelty and Inventive step**

The present application refers to the preparation of acetic acid by carbonylation of methanol and/or its reactive derivatives with carbon monoxide in at least one reaction zone containing a liquid reaction composition comprising an iridium carbonylation catalyst, a methyl iodide co-catalyst, a finite concentration of water, acetic acid, methyl acetate at least one promoter selected from ruthenium, osmium, rhenium and at least one catalyst system stabiliser selected from indium, cadmium, mercury, gallium and zinc and wherein the molar ratio of iridium:promoter:stabiliser is maintained in the range of 1:( $>2$  to 15):(0.25 to 12).

Document D1, which may be considered as the most relevant state of the art, discloses the same reaction with iridium as a catalyst in the presence of a promoter selected from indium, cadmium, mercury, gallium, zinc and tungsten and a co-promoter selected from ruthenium, osmium and rhenium. The ratio of promoter to iridium is (0.1 to 20):1 and the ratio of co-promoter to iridium is (0.1 to 20):1, see D1, claims 1-5. D1 further discloses two explicit examples with Ir:Ru:Ga equal to 1:2:2 and Ir:Ru:In equal to 1:2:2. The presently claimed ranges are entirely included in D1. The overlapping range is very broad and is not sufficiently removed from the known range illustrated by examples (see D1, example 13 and 14). In the light of the disclosure in D1 a new teaching cannot be seen for the subject-matter of claims 1-10 (i.e. arbitrary selection). The requirements of Art. 33(2) PCT are thus not considered to be fulfilled. Merely calling the promoters of D1 now stabilisers and arbitrarily excluding the explicitly disclosed examples from D1 is not sufficient to establish novelty.

Even if formal novelty can be established, the application is not considered to meet the requirement of Art. 33(3) PCT. According to the applicant the problem to be solved was to provide a process whereby the stability of the catalyst system is improved. In case of high amounts of the catalyst promoters ruthenium, osmium

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and rhenium, e.g. at a molar ratio of Ir to promoter of 1:6 precipitation of the catalyst system occurs, which can be avoided by the addition of indium, cadmium, mercury, gallium and zinc in a specific range (see present application, table 1). The presently claimed range is however very broad and very close to the state of the art examples of D1. At a molar ratio of Ir:promoter of 1:2 no catalyst precipitation occurs, see present application experiment B. It is not apparent that just outside this value a problem with the stability exists. It is thus not clear whether a problem has been solved by using "indium, cadmium, mercury, gallium or zinc" as a stabiliser. Without data that the presently selected range solves a problem over basically the whole range an inventive step cannot be acknowledged (arbitrary selection). Hence, no inventive step is present in the subject-matter of claim 1-10.

**Industrial applicability**

There are no objections against the industrial applicability of the presently claimed subject-matter.

**Further remarks:**

The expression "reactive derivatives" is vague and unclear (Art. 6 PCT). With regard to the precise definition of these derivatives in the description on page 4, the expression should be substituted by the more precise definition.